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Innovative packaging design for the cosmetics industry

Case study: Innovative packaging for the face cream

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I hereby declare that the work submitted is mine and that where I have made use of another's work, I have attributed the source(s) according to the Regulations set in the Student's Handbook.

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Abstract

This dissertation was written as part of the MSc in Strategic Product Design at the International Hellenic University.

Cosmetics industry growing very fast, but only a small percentage of the companies use sustainable packaging. Nowadays, on the market there are a wide range of the similar cosmetic packaging.

The main purpose of this thesis, is to investigate the disadvantages of the skin care packaging and to propose new innovative packaging, which will escaped the environmental impact that majority cosmetics packaging cause.

Keywords: packaging, cosmetics, product, design, branding, luxurious, sustainability

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Contents

ABSTRACT	3
ACKNOWLEDGEMENTS	4
CONTENTS.....	V
INTRODUCTION	5
RESEARCH AND INDETIFICATION OF THE DESIGN PROBLEM.....	8
2.1 MARKET RESEARCH	8
2.2 TYPES OF SKINCARE PRODUCTS	9
2.3 MATERIALS FOR SKINCARE PACKAGING	11
2.4 STATEMENT OF THE DESIGN PROBLEM	12
2.5 ENVIRONMENTAL APPROACH	13
3. PACKAGING DESIGN METHODOLOGY	14
3.1 PACKAGING DESIGN DEFINITION.....	14
3.2 ROLE OF THE PRODUCT PACKAGING	15
3.3 TYPES OF PACKAGING.....	16
3.4 THE ROLE OF GRAPHICS AND COLOR	17
3.5 THE ROLE OF PACKAGING SHAPE	19
3.6 THE ROLE OF ERGONOMICS.....	20
3.7 AUTHENTICITY IN PACKAGING OF COSMETICS.....	21
3.8 SUSTAINABILITY OF THE PACKAGING	21
3.9 BIOMIMICRY IN DESIGN	23
3.9.1 Different applications of the biomimicry.....	23
4. FACE CREAM PACKAGING DESIGN PROPOSAL.....	24
4.1 DEVELOPMENT OF THE CONCEPT	24
4.2 CONCEPT GENERATION.....	24
4.2.1 Brainstorming	24
4.2.2 Target group	25
4.2.3 Empathy map	26

4.2.4 Persona	27
4.2.5 Moodboard	28
4.3 <i>PRODUCT CONCEPT</i>	30
4.4 <i>CONCEPT TESTING</i>	31
4.5 <i>CONCEPT DEVELOPMENT</i>	33
4.6 <i>MATERIALS</i>	34
4.7 <i>BRAND INDENTITY</i>	35
4.8 <i>QUESTIONNAIRE</i>	35
4.8.1 Results of the Interviews	36
4.9 <i>WOODEN BOX</i>	41
CONCLUSIONS	43
BIBLIOGRAPHY	44
FIGURES	48

1. Introduction

Nowadays, in the industry, packaging plays a very important role. There are several components involved in packaging. Packaging requires the overall brand to be conveyed rapidly. Packaging plays a major role in winning in-store market, where the customer makes some sort of assessment decision and compares multiple brands. In order to produce the additional increase in revenue and market share, information on the packaging, which illustrates key benefits and features, needs to be successful. In recent years, the environmental effects of packaging have been widely taken into account and a number of brands have switched to more environmentally friendly packaging formats, which appear to cater to some market groups and can become a deciding factor in their purchase.

In the growth of the cosmetic packaging industry, the advancement of new and varied packaging types and creativity in packaging play a major role. In addition, because of increases in disposable income, growing knowledge of personal care, improving living standards, and revolutionary designs, such as sprays and sticks, emerging economies are creating tremendous growth opportunities for cosmetic products. With a larger number of brands and products joining the beauty industry, some of the factors contributing to market growth are creativity, packaging effectiveness, and desire for product differentiation.

1.1 Initial Review of the Literature and Key References

Product and shipping packaging are now seen in a radically different light with the growth of social media and online shopping as integral parts of our everyday lives. Nowadays, wherever an individual might be, they can see what a specific product's packaging looks like. It should exist the wow factor when the consumer unwraps the product in order to do well in the digital world, on Instagram, YouTube, Facebook, etc. Especially essential in cosmetics are packaging design and special features. For many shoppers, one big factor is not only luxury, but also sustainability: and the packaging

needs to be just as natural as the beauty product's ingredients. Refillable and recyclable packaging made of environment-friendly materials is high up on the wish list. But that doesn't mean doing it without an air of luxury: for example, transparent cellophane made from biodegradable wood pulp can add to the packaging some sparkling metallic glamour.

1.2 Research Questions

How to make innovative packaging for cosmetics industry?

How to include biomimicry in design of cosmetics packaging?

How sustainability of the cosmetics packaging effects on the customers?

How it should be designed cosmetics packaging to be innovative?

What should be changed from the existing cosmetics packaging?

What is the expectation from the new design?

1.3 Research Design & Methodology

The proposed Research and Design Methodology includes a number of steps in order to result in new and fresh ideas development:

- Explore findings from extensive literature survey i.e. customers' needs and demands, design, packaging new technologies, 3d printing, shapes and forms, labels.
- Use design tools and techniques i.e mind map, persona, mood board, industrial sketching, empathy maps, questioner, to develop initial idea list and explore specific ideas.
- Create CAD models i.e. 2D vectors, 3D solid modeling, 3d free form modeling.
- Run analyses i.e. sustainability, alternative designs, application of biomimetic.
- Render and present holistically the proposed concepts.
- Conclusion

1.4 Contribution and Expected Outcomes

The main purpose of this study is to discuss the limitations of packaging for cosmetics and to propose a new packaging solution. On the market there are many variety of the cosmetics packaging. Our idea is to design sustainable innovative packaging.

1.5 Structure of the Dissertation

The aim of the **first chapter** is to give to the reader an interest in the subject and also a general picture of the problem area. **Chapter two** presents all the theory collected for the study, which goes through the market research, in order to explore the negative aspects of the specific package and define the design problem, chapter two presents all the theory gathered for the study that goes through market research. Through research into the packaging design process, which takes place in the **third chapter**, issues such as morphology, esthetics, biomimicry, ergonomics and sustainability are discussed. Finally, the **forth chapter** will present the concept of the product and the survey's results.

2. Research and Identification of the Design Problem

This chapter includes a brief review of the market research, types of skincare packaging and statement of the design problem. All steps mentioned above are base for designing a new packaging and record all potential problems.

2.1 Market Research

The cosmetics industry (makeup or beauty products) is a combination of chemicals commonly used to improve the human body's appearance or scent. Some of the beauty products that are primarily available and used by individuals are skin care, hair care, deodorants and makeup. The main distribution channels are retail stores, including supermarkets, exclusive brand shops, and specialty stores, among others, with online channels gaining prominence among customers (Allied Market Research, 2016).

The growth of the cosmetics market is stimulated by changing lifestyles, growth in global economies and growing demands for skin care products due to different climatic conditions. Also, the growth of the cosmetics market is encouraged by a change in preference towards natural and organic beauty products. The growing demand for natural and organic beauty products provides manufacturers with potential opportunities to innovate and create new products in line with customer preferences (Allied Market Research, 2016).

Skincare products are commonly used to cleanse and hydrate face, body and hands. The products are sold as creams, lotions and serums. Products for skin care are roughly categorized into 5 categories: facial cleansers, anti-aging products, hand or body lotion and facial moisturizers. Hand and body lotions are very heavy and have a protective layer to moisturize the skin and hydrate it. Creams and serums are used for renewing skin elasticity, reducing puffiness and firming the skin. Facial moisturizers minimize dryness and eliminate it (Sethi et al., 2016).

2.2 Types of skincare products

Cosmetic packaging comes throughout many different forms and sizes. The most common types of cosmetic packaging that are used are:

- *Cosmetic Jar*
- *Cosmetic Tube*
- *Cosmetic Airless Pump*
- *Cosmetic Dropper*

Cosmetic jars and pots are usually used for face creams, lotions, lip balms and other cosmetics. Materials used in most cases are: glass, acrylic glass, polyethylene, acrylic and many others. These are used because they are lightweight, cheap and easy to fill with. Shapes that are included are: square, oval, round and square with round pots in the middle of them.



Figure 1: Clinique Jar (Source: www.amazon.com)

Tubes are usually used for face creams, lotions, eye creams and face creams. They are most commonly made from polyethylene and have different top shapes that can be used. Triangular toppers are practical because they allow the consumer to push out as much product as they want. For cosmetics that need regulated amounts, push tops are also popular.



Figure 2: Clinique Tube (Source: ae.goldenscent.com)

Airless Pump, which incorporates a container with a non-pressurized method of dispensing, protects the formulation of a substance from air exposure. It is commonly used for luxury products. Skincare creams, lotions, and serums are also used in products using airless containers. For tubes, bottles and pots, multiple manufacturers provide different forms of airless dispensing systems.



Figure 3: Vichy Airless Pump Bottle (Source: www.lookfantastic.gr)

Cosmetic droppers are an ideal packaging solution for low viscosity cosmetic formulations because they allow to control dosage of the product. The primary advantage of cosmetic formula droppers is that they give the user the convenience of being able to treat small areas with a particular dose. There is no product wastage and we control amount of product which will be used. There is no access to outside contaminants at the pipette tip.



Figure 4: Korres Dropper Elixir (Source: www.hersonissospharmacy.com)

2.3 Materials for Skincare Packaging

Polyethylene terephthalate (or PET)

Often known as PETE or Polyester. PET is mostly used for the manufacture of cosmetic plastic bottles. PET is popular because it provides an appropriate barrier between the plastic and the product inside. This helps prevent the plastic from being attacked by chemicals and material from degrading. PET can be a very clear plastic and look like glass. It is also possible to produce PET in almost any color (Sanford, 2018).

PP – Polypropylene Plastic

Polypropylene is 100% recyclable and BPA-free. Is a common choice for cosmetic containers and tubes (Sanford, 2018).

Glass

Glass can be costly to ship and to manage in manufacturing, but an upscale and commonly seen as an eco-friendly choice. Dark glass jars are perfect for serums and lotions rich in vitamin C. Glass may be colored, translucent or frosted (Sanford, 2018).

Metal

Metal has a fantastic look, but for items with a high percentage of oils, it needs a special coating. During manufacturing and delivery, metal lids can easily be concaved. Metal may also be used on a plastic jar as a coating (Sanford, 2018).

2.4 Statement of the design problem

Zero Waste estimates that the global cosmetics industry produces over 120 billion units of packaging per year, much of which is not recyclable. The majority of beauty goods have plastic packaging, which can take almost 1,000 years to decompose. It is disturbing to digest that eight million tons of plastic are poured into our oceans every year (not necessarily from cosmetics), contamination that is harmful for sea life (Nourll, 2019).

One more negative effect of the beauty industry is air pollution. Recent research has shown that deodorants, hair sprays and perfumes pollute the atmosphere as much as emissions from vehicles. Nowadays, a significant portion of the emissions coming from cosmetic products. (Nourll, 2019).

Sustainability is also an area of environmental concern for ingredients used in products, ranging from how they are sourced to the long-term effects of cosmetic industry (March, 2018).

2.5 Environmental Approach

Packaging is a customer's first introduction to a product and in the same time the first impression. This first impression will describe the customer experience for luxury beauty brands. Many statements about the ingredients between skin products can be difficult to distinguish for customers. On the other side, packaging is instantly memorable. Consumers who care about sustainability, however, are gradually asking brands like Estee Lauder, Aveda, and Origins, La mer what their packaging consists of (Goldberg, 2020)

Without doubt the beauty industry has a packaging problem. Plastic, ubiquitous in cosmetic packaging from thin cellophane wrappers on lipstick to plastic pumps and bottles for lotion and creams has come under increased scrutiny for its negative environmental effects. In fact, a 2017 study in Science Advances showed that plastic is number one material for packaging around the world (Goldberg, 2020).

Estee Lauder Makes Sustainable Packaging a Priority

Many cosmetics companies do not have sustainable packaging. However, one company that give a big importance to eco-friendly packaging is Estee Lauder. Furthermore, they announced in October 2019 that they will develop refillable and reusable packaging until 2025. (Goldberg, 2020)

Design and aesthetics of cosmetics product packaging must reflect one note of prestige and luxurious. Nowadays, consumers, especially young population purchasing luxury cosmetics are concerned not only with preserving their skin, but also with protecting the environment. The term sustainability is not something new, but last years it is more advanced and important than ever before. The beauty industry recognize the importance of everything mentioned above and they start slowly to move to the sustainable packaging.

The Estee Lauder group produces thousands of packages a year for its makeup, skincare, haircare and fragrance products. Hence, they closely follows trends and invest in eco-friendly packaging.

3. Packaging design methodology

The literature that comes primarily from the marketing field has been used in this chapter to explain the function and significance of packaging and consumer behaviour. This chapter includes all steps which are indispensable before to start design the packaging of the product.

3.1 Packaging Design Definition

The packaging must protect the product from physical damage and transit. Also, the product must be protected from bacterial degradation as well as climatic hazards such as cold, heat, moisture, etc. Packaging of the food product, must significantly reduce food waste during the transit journey. Nowadays, consumers give a big importance to the product shelf lives and, track and trace of product. On the shelf, packaging must distinguish itself, to be attractive and different comparing it with thousands other packaging. The package also plays a role in effective merchandising of the product on the shelf. Another function of packaging is the unitization of the product into a point of sale, as packaging helps to group or consolidate the product. Packaging must therefore be seen as an advantage to be maximized rather than as an expense to be reduced, in support of the slogan of the World Packaging Organization, "Better quality of life, better packaging, for more people" (Gopinathar et al., 2016).

Paine continues its definition on the basis of the core functions of packaging by referring to it as a commodity whose primary objective is to contain, secure, maintain, notify, offer, and provide comfort. The importance, even the need for these added features, on the other hand, is considered contentious and there are different views on whether packaging is a waste of materials, even to what degree these functions can be deemed necessary (Paine et al., 1992).

3.2 Role of the product packaging

Without the product for which it has been made, packaging has no significance. Throughout the processing, transport and storage, its primary role is to protect and conserve the product. Good packaging also guarantees the safety and health of consumers. Packaging should prevent product from waste, which would result in an environmental loss. Last but not the least, packaging carries information about product and is marketing tool.

Nowadays, in the contemporary market, a greater focus is given to how the package sounds, appears and talks. The packages are forced to follow the shift in the lifestyle of consumers (DuPuis et al., 2011). This is reason why packaging to improve their functionality, such as to be made of the high tech material with innovative forms and features. For example, biodegradable inks and date codes that change color when expired (DuPuis et al., 2011). The changing role of packaging is perceived even by the evolution in the term package. For example, package or container is now translated as packaging. This is reason why packaging is now considered a marketing tool, which through the packaging offers complete retail experience.

Packaging has always played a significant role in the differentiation of similar products. Graphics, shape, materials and surface finish may have predominant role at diversifying products. For example, a bottle of Coca Cola accomplished it by color, material and the surface finish (Calver, 2004).

The six key goals that should be accomplished when designing a packaging are given below.

1. Containment - This is one of the primary objectives of the packaging which role is to contain the product. Containment allows separation of the product into portions of known weight. To a great degree, the form and dimensions of the package dictate the space requirement for transport, storage and display.

2. Security - For products that are highly toxic to those who carry or use them, is required a special form of protective packaging. These products include liquid and highly flammable fuels, radioactive material, etc. The packaging with high level of danger should also be done in such a way that children cannot open it easily.

3. Protection - This is one of the most important function of the food packaging. The package protect food from chemical, physical, microbial and microbial attack from the exterior. The protection function can be separate into some groups: natural deterioration, safety, waste reduction and physical protection.

4. Convenience - Elements such as easy opening, one-handed, portability, and closing affects the position of the product on the market. For the big percentage of products, the product convenience is crucial for customers.

5. Information - The packaging gives necessary information to the consumers. Packaging provides information such as ingredients, weight of the product, name and address of the manufactures and general features of the product.

6. Marketing - Companies use attractive colors, symbols, logos and captions to promote the product. It directly affects the customer's purchasing decision.

3.3 Types of Packaging

There are different types of packaging. Packaging can be defined in relation to the type of product which is packed: pharmaceutical packaging, food packaging, military material packaging, medical device packaging, etc. We can categorize packages by function such as primary, secondary, tertiary etc. (Gopinathar et al, 2016).

Primary packaging is the first packaging layer in which the product is contained. Dimensions and form of the product directly dictate the main priorities of primary packaging. The main purpose of primary packaging is to protect the product and against contamination. Depending on the product, way of transport and storage, primary packaging can have many functions and applications. (Gopinathar et al, 2016).

Secondary packaging is used for group of pre-packed products and is commonly referred as a SKU. Multiple components such as box, separators and paper made up secondary packaging. It also helps to make a product easily recognizable in the warehouse. Secondary packaging have two main functions:

- Branding - Secondary packaging is very important for marketing strategy of the product. This is very important in case of display packaging.
- Logistics - For easier handling, transport and storage secondary packaging groups products, therefore it must be:
 - Safe for the transport to the consumer destination.
 - Well organized, to include large volumes of primary packed products.
 - Protective for the primary packaging and to keep its original condition during the transport.

Tertiary packaging or transport packaging: Tertiary packaging: Transport packaging refers to the transport from point A to point B. It should be designed with local conditions and expectations. Therefore, tertiary packaging must be:

- Protective - First of all, packaging must protect goods in transit. Transport packaging should be manufactured so as to absorb unintended shocks, impacts or accidents, as well as protect against the elements such as excessive temperatures or heavy weather.
- Versatile - Transport packaging should be ready for possibility of multiple stages in transit before the product arrive to the final destination. This stages includes: re-packaging, re-loading and possibly storage of the product. Therefore, tertiary packaging should be versatile to facilitate all this stages.

Industrial Packaging is used to package a product during and after the manufacturing process. It should protect products from everything from moisture to vibrations. Industrial packaging is usually used for the products that are sensitive (Gopinathar et al, 2016).

3.4 The Role of Graphics and Color

Color is an excellent source of information. Big percentage of assessments and evaluations are based on colors (Singh, 2006). Colors have big and profound effect on consumers' behaviors, feelings and thoughts. Marketing managers and scientists agree

that the product design, aesthetics and form are necessary tools to gain advantage in competitive market (Kreuzbauer et al., 2005). Graphics and color are crucial factors in affecting consumers' purchase decision which marketing experts and designers should have in mind. Graphics includes image layout, color combinations, typography, and product photography (Silayoi & Speece, 2007). It is observed that colors is decisive factor in buying decision for the consumers who are in hurry, which is typical lifestyle nowadays. An eye-catching graphics and color would result in lasting effect on consumers' purchase decision. In fact, attractiveness, which can be obtained through graphics and color, at the point of buying plays a key role in getting brand choice (Silayoi & Speece, 2007).

Given packaging color and its role in affecting consumers' purchase decision, researchers need to focus on psychology of colors and color preferences of consumers which are context and culture specific. The results of research into color preferences indicate that color preferences are intimately related to determining factors such as age, gender, ethnicity and religion (Kauppinen-Räsänen, 2014).

Silayoi and Speece (2007), in their analysis approach, examined of packaging attributes. Based on the gathered data, they argued that the most effective packaging is required to clearly provide the information of product and have more classic and traditional graphic design, colors and shape.

In brief, colors are of primary importance in persons' daily life and especially in branding, packaging, and product sale. Packaging designers are required to take advantage of colors' connotations in designing packaging and combining different colors to attract consumers' attention in making purchase decision. For example, Crowley (1993) claimed that designers can use more activating colors such as red and blue to engage consumers in impulse buying. So, it should be highlighted that selecting the right colors would increase product sale dramatically.

3.5 The Role of Packaging Shape

Packaging shape can be an important factor in the differentiation of products among the competition on the market. Shape, color, material and graphic design are the most important elements of a packaging. Packaging shape is considered as an important tool for product promotion and differentiation on the market. Bloch (1995) proclaim that there are many limitations in developing original packaging shape. The main reasons are production and cost restrictions, which consider materials and machines. Employers can also be considered as significant restriction factor since it needs to be considered how much time it takes to handle packaging of a specific shape. Buying decisions are influenced by: perception, motivation and beliefs. Consumers use these factors to recognize their feelings and needs, gather and analyze information, formulate opinions and at the end take action. The process in which consumers select, organize and interpret information into a meaningful whole is called perception (Lamb, 2009).

Form is a crucial factor in consumer choice and directly affects position on the market comparing it with the competitors. Based on the researches packaging shape is good way to identify and classify the products. It generates inferences regarding other products attributes as a part of perceptual categorization (Berkowitz, 1987). For example, for milk 'Soy mamelle', Russian agency Kian developed conception of the package shape resemble an udder (Figure 5).

Something that should be used like advantage is geometry. Geometrically more complex shapes appear larger than geometrically simpler packaging of the same dimensions (Garbe et al, 2009). Furthermore, rectangular shapes are more perceived than round shapes.



Figure 5: Packaging for the soy milk “Soy mamelle” (Source: www.pinterest.com)

3.6 The Role of Ergonomics

Ergonomics plays an important role in the design of packaging. It aims to make packaging compatible with human limitations. Packaging should be practical and easy to use. Industrial designers pay close attention to the how consumers interact with the product and package design. During designing, designers should pay attention about factors such as ease of use, age of the consumer handling the packaging, visibility of the product inside the packaging, etc.

Designers of the packaging should answer on the following questions:

- Is the pack easily closed to keep the product shelf life?
- Is there enough information on the package about dimensions?

- Are there instructions to how to cut the package are clear and understandable?
- Does the package early specify the package storage instructions?
- How does the design and materials used convey the message and if the packaging is sustainable?

Ergonomics is the crucial element of the packaging and designers must follow ergonomics rules. Using ergonomic testing designers should improve their design. They can see what does not work and eliminate potential problems (Tirpude et al., 2017).

3.7 Authenticity in packaging of cosmetics

Authenticity serves to build a connection between brand and audience. In the context of a cosmetics product, authenticity communication is based on its promotion and how it is packed. Packaging communicates brand authenticity and delivers on brand's message through the following elements: color, graphics, logo, materials, fonts and shape (Annunziata et al., 2011).

3.8 Sustainability of the Packaging

Sustainability of packaging is a key factor in design decisions as focuses on the life cycle of the packaging. Sustainable packaging refers to the development and use of the packaging that have minimal environmental impact and footprint. Materials which we use for the packaging directly indicate if the packaging can be recycled. There are plastics such as (PET) Polyethylene Terephthalate, which allows the recycling. On the other side, material such as Polystyrene is not recyclable (Calver, 2004). Product packaging sends to the consumer message about the values of the cosmetics brand. Therefore, the packaging design has to align with the company mission and brand identity.

Packaging is becoming a focus area for many cosmetic companies. They want to reduce the environmental impacts of their products. Cosmetic products have primary,

secondary and tertiary packaging. The biggest problem is primary packaging of cosmetics, such as plastic tubes and bottles. The growing importance of sustainable packaging is evident in the sustainability plans of the majority large cosmetic companies, such as company Estee Lauder. They have made commitments to reduce the environmental impact of their packaging. For example, Unilever has pledged to reduce the weight of its packaging by a third by 2020 (Organic Monitor, 2010). Cosmetic companies are looking at various ways to recycle packaging materials. Materials such as paperboard, glass and aluminum are recyclable. However, plastic is still not recyclable. Last year reusable cosmetic packaging become more popular. Some cosmetic companies are opting for long-lasting bottles and tubes that can be refilled. One of the example is Givenchy company which launched perfume that users can refill with the 50 ml glass bottle.

Cosmetic companies are becoming more innovative in sustainable packaging. For example, the American company, Terracycle, works with companies like Johnson & Johnson whereby it collects used product packaging to make new eco-friendly household products that are sold in major US retailers.

Bioplastics have low applications in the cosmetics industry because of high water permeability and heat sensitivity. Most applications in the cosmetics industry have therefore involved hybrid polymers. For instance, Procter & Gamble has been using hybrid polymers in its Pantene hair care products since 2012. Some natural raw materials, such as wood fiber and bamboo, are finding packaging applications in the cosmetics industry. For example, Louvrette manufactures genuine wooden caps and refillable jars for skin care products. The US company, Physician's Formula, uses bamboo casing for its bronzers and compact foundation.

In general, there are two general approaches to sustainable packaging: design approach and materials. Both are complementary that is, eco-design packaging can involve the use of materials with low environmental impact (Sahota, 2014).

3.9 Biomimicry in Design

For centuries nature has been used like inspiration. Many problems of humanity are solved using biological shapes, forms and mechanisms. Designers and engineers over and over searching their inspiration in nature to solve their problems. Nowadays, industrial design have serious attempts to use nature as a significant tool of inspiration for design. Hence, the concept underpinning ideas such as taking inspiration from nature in order to solve problems in the material world is now referred to as "biomimicry" (Kennedy, 2006).

3.9.1 Different applications of the biomimicry

There are three different applications of the biomimicry. They will be explained in the following rows.

First application is based on mimicking nature. For example, using properties of natural materials in a laboratory. Due to the technological requirements needed, this application always requires engineering efforts (Bras et al., 2005).

Second application can be of a principally engineering like nature. This application involves developing materials, products and systems using metaphors from nature, and seeking inspiration through systematic studies of nature (Kelley, 2001).

One of the example is the development of a self-sealing valve for a bicycle water bottle by the American company IDEO. The bottle of the IDEO company is designed in way to squirt water into the mouth of user and then close the nozzle with users teeth again to prevent spillage and the entry of dirt into the bottle. The self-sealing valve mimics the tricuspid heart valve and lets out water when it is squeezed. Hence, the cyclist can open, drink and close it in one motion (Bras et al., 2005).

Third application consists of using form or shape language from nature to create product with good aesthetic. Designers use this application in projects with a strong art

components. For instance, Antonio Gaudi's buildings use rich and organic forms and decorations. One more aspect is to create approachable and understandable products using analogies of existing things.

4. Face Cream Packaging Design Proposal

In this chapter we are going to present the concept that we developed based on all the data reported in the theoretical part of the work.

4.1 Development of the Concept

Cosmetics industry is wide and it exist very big specter of the cosmetics products. Our focus was on the skincare products. We tried to keep all positive aspects of the existing packaging and involve some innovation in the shape.

4.2 Concept Generation

Concept generation is a crucial part of the engineering design process. It comes early on in design process and is essentially a procedure that begins with range of user needs and requirements. The end of the concept generation process is product concept design. Concept generation process consist of steps such as: understanding problems, researching existing solutions, brainstorming, assessing the solutions, choose the winner and start working on it.

4.2.1 Brainstorming

For organizing thoughts is use technique called 'brainstorming'. In the brainstorming process was created mind map in order to investigate the technical and morphological

aspects of the products (Da Luz et al., 2011). On the figure below is presented result of the brainstorming process for the skincare products.

The mind map is branched into the following sectors: Biomimicry, Target audience, Ergonomics, Sustainability and Aesthetics. Each of these points are equally important for the product design.

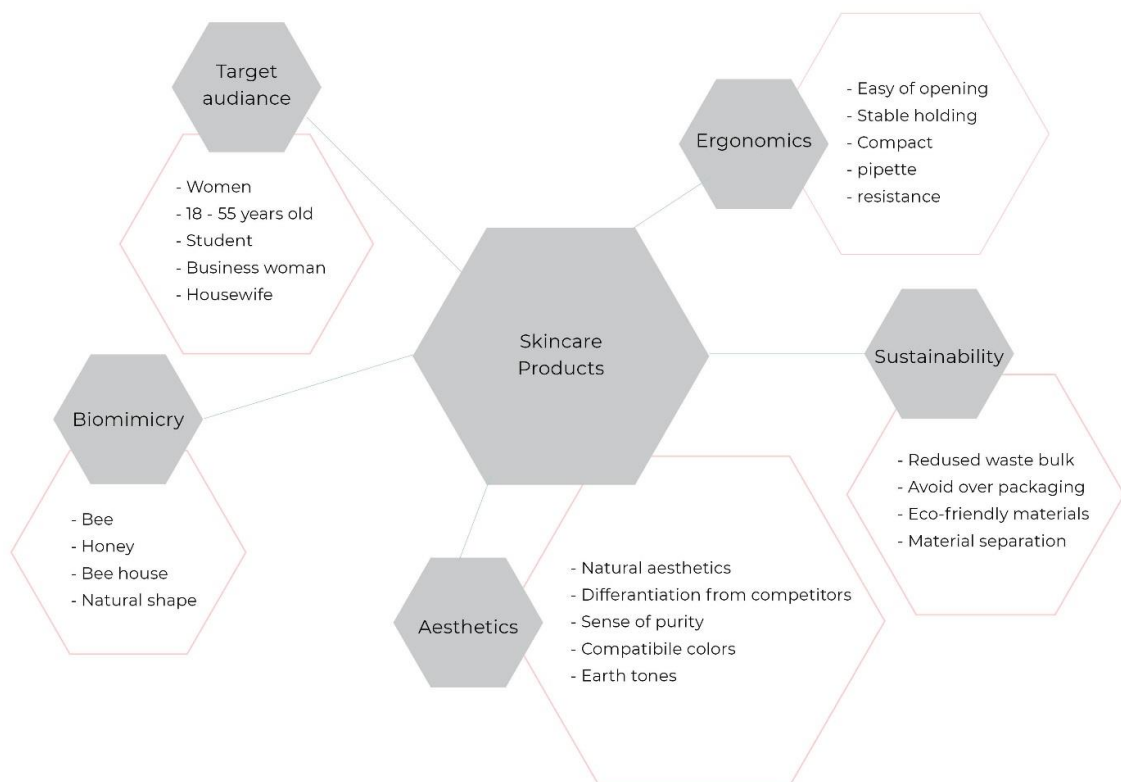


Figure 6: Brainstorming - Mind Map.

4.2.2 Target group

Target group is group of people for which the product should be designed. To build good and successful product, designers need to be informed about attitude and interests of people who are in the target group. That is why identifying the target audience is important. The target group for our product are women aged **from 18 until 55**.

4.2.3 Empathy map

Empathy map is a simple and easy to digest presentation that include knowledge about user's attitudes and behaviors. It is a simple activity that can be done with product development, marketing and sales, stakeholders or creative teams to build empathy for consumers. Empathy maps are also great as a background for the construction of the persona. The Empathy map presented on the following figure include next information about Persona:

- What she does
- What she thinks and how she feels
- Goals
- Influences
- Problems

From the all information gathered from the empathy map we can conclude that our persona search for the product with innovative packaging and which will solve her skin problems in short time of period. Sustainability is also of great importance.



Figure 7: Empathy map.

4.2.4 Persona

After setting the target group, we created Persona (Figure 5). Persona are fictional character, which is created based on our research in order to represent the user that might use our product. Creating persona will help us to understand our users' experiences, behaviors, needs and goals. Our persona is 30 years old Anna from Athens, Greece. Her profession is economist. Figure 8 give us the following information about our persona:

- Personal Details
- Traits
- Beauty influencers
- Favourite Cosmetics Brands
- Goals
- Pain Points
- Personality

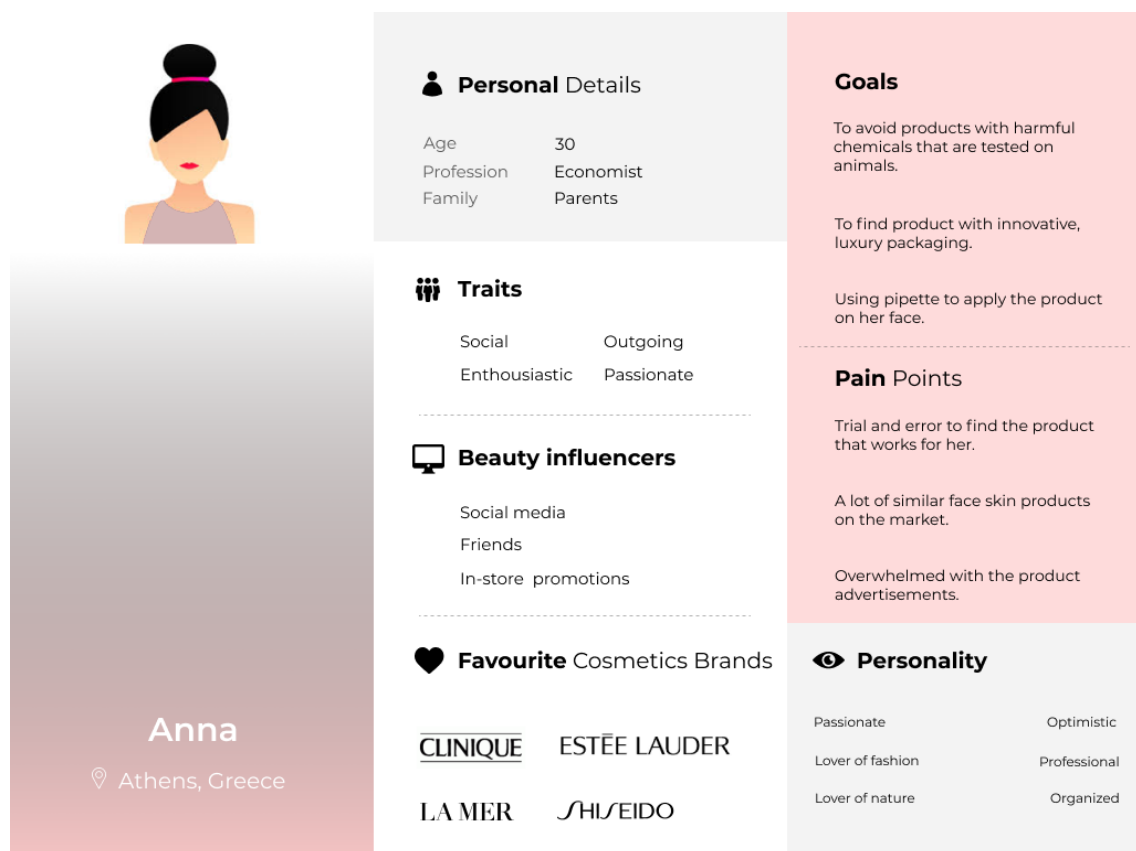


Figure 8: Persona.

4.2.5 Mood board

One more tool and technique which helps designers during their brainstorming process is called mood board. Developing a mood board helps them to develop their ideas. A mood board is a collection of textures and images related to the design. On the Figure 9 is presented mood board that we used to create our product. Also, the mood board include the color palette and things from nature which could be updated in different ways in the design. This mood board was the guide through the design process.



Figure 9: Mood board.

4.3 Product Concept

Idea was to design packaging for 30 day night face repair cream. The packaging includes applicator to dab the cream. The shape of the packaging follow the honeycomb shape. The basic ingredient of the cream is honey, so using this shape we very clear indicate that cream consists of the honey. The packaging is rechargeable. That means one time when the cream is used up, we need only to buy the recharge and put it in the previous packaging (cosmetic jar). Rechargeable part includes 30 holes filled with the cream. Each hole is for each day from 30 days treatment. On the Figure below is presented the sketch. Different packaging options are sketched, in order to reach the final design solution.

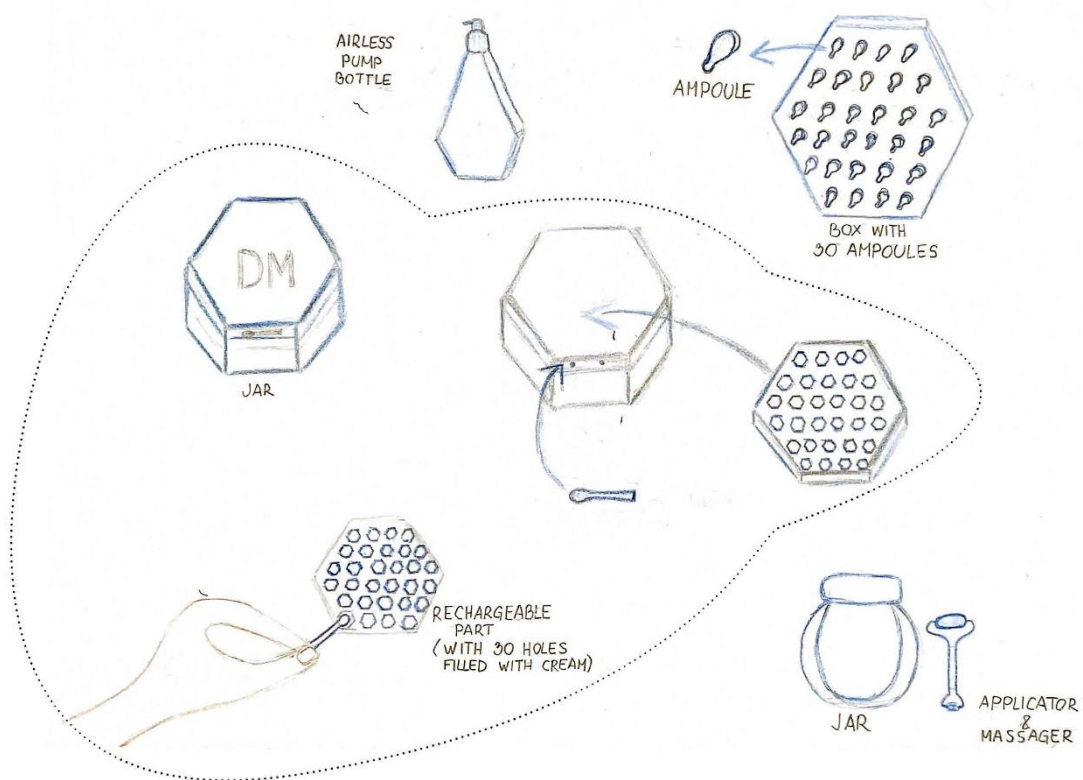


Figure 10: Face Cream Packaging Concept.

4.4 Concept Testing

Concept testing is a process that involves questions about concepts and ideas for a product before actually launching it. For the better understanding of the form and in order to test ergonomic usability we created physical model from the plastic using 3D printer. On the figure 11 is presented cosmetic jar which consists from:

- Base
- Lid
- Part with the cream
- Applicator

The applicator is located on the cream lid. The part with the cream which can be removed and replaced with a new one is in a glass jar. The logo is engraved on the lid of the cream.



Figure 11: Prototype and Concept Testing.

4.5 Concept Development

The brand name chosen for the concept is “MD” which refers initials of the cream maker. The packaging exudes simplicity and elegance. The idea was to build luxury image of the packaging using combination of black and gold. Moreover, the packaging is limited edition. Packaging consists from 4 parts, the jar, lid, part with the cream and applicator. The rendered pictures are presented below.



Figure 12: Rendered Image of Product.

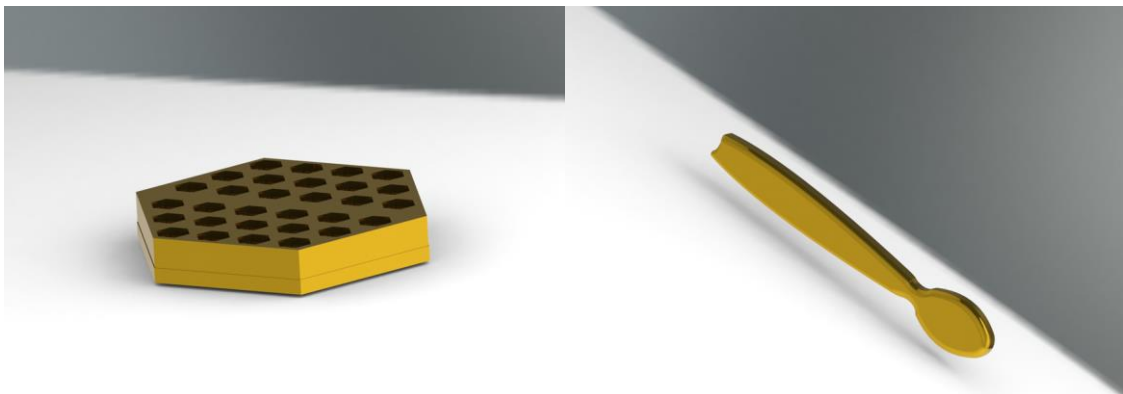


Figure 13: Rendered Image of Rechargeable part and Applicator

4.6 Materials

More and more consumers are paying attention to the packaging materials, recyclability and re-usability before they purchase the product. Therefore, we carefully chose materials. Nowadays, the sustainability of packaging is very important and people's awareness of sustainability is growing more than ever before. With the reloadable packaging, we wanted to put plastic reduction on center stage.

The materials that was planned to be used for the product are environmental friendly. The MD cream is designed to be reloadable. The jar is made from glass and the refill part from plastic. The jar and lid are designed to be conserved, while a plastic refill containing the formula is replaced after use. The applicator for the cream or spatula is made from zinc alloy and is 100% recyclable. It can withstand everyday use and can be cleaned regularly.

Glass

Glass is a 100% recyclable material and can be recycled endlessly without losing its integrity. Made from abundant natural raw materials such as sand, it doesn't use up precious natural resources. It's also already widely recycled, and because glass waste melts at a lower temperature than raw materials, recycling glass can also help save energy. But it's not just an eco-friendly choice. Glass offers a premium look for cosmetics, so it's a great way to draw customers to the product. It's also nonreactive with many substances, so it's ideal for preserving the goods.

Bioplastic

The shape, color and feel of the packaging transports the image of a product and bioplastics ideally support the sustainable message of a brand. The awareness about using bioplastic materials is high in the cosmetic packaging market.

Zinc

Products which contain the zinc are recyclable. Zinc is possible to recycle at all stages of use and production. It can be recovered without loss of chemical or physical properties. (International Zinc Association's Zinc Recycling – Material Supply).

4.7 Brand Identity

A brand is not just a logo, but a many other components such a name, symbol, word or sentence that companies use to distinguish their product on the market. Luxury brands must carefully choosing visual elements that stick on the customers' minds. The name of brand is MD, which refers initials of the cream maker. Idea was to build elegant and sophisticated logo which will be simple and memorable. Innovative shape is chosen because is limited edition and it should be unique. We choose black and gold for colors. Combination of those two shades looks very elegant and give one note of luxurious. For the typography were used two fonts, sans-serif and serif.



Figure 14: Logo

4.8 Questionnaire

For the concept testing questionnaire were used photos of the rendered product presented above. We chose random womens different ages from 18 untill 55 in order to cover all ages from the target group. The questions with the photos were sent by e-mail. In the survey perticiped 80 woman.

Questions:

1. How innovative is this product from 1 to 5?
2. Would you prefer to have wooden or cardboard box for the this product?
3. Do you like the idea about rechargeable packaging?
4. Do you like the materials choosen for the product?

5. Would you like to change something in the logo?

If the answer is yes, please write the explanation down.

6. Do you think that applicator is necessary for this product?

7. Overall, how do you rate this product from 1 to 5?

8. How much you spend on such products monthly?

- ☐ less than 50 €
- ☐ more than 50 €

4.8.1 Results of the Interviews

Below are presented the results of the questionnaire and the feedback we received regarding the previous presented product concept. Regarding to the results most of the respondents are satisfied with the product. They had some suggestions which we will explain later.

The majority of the respondents (65%) rate with 5 innovation of the product, 30 % rate it with 4 and 5 % rate it with 3. (Figure 11)

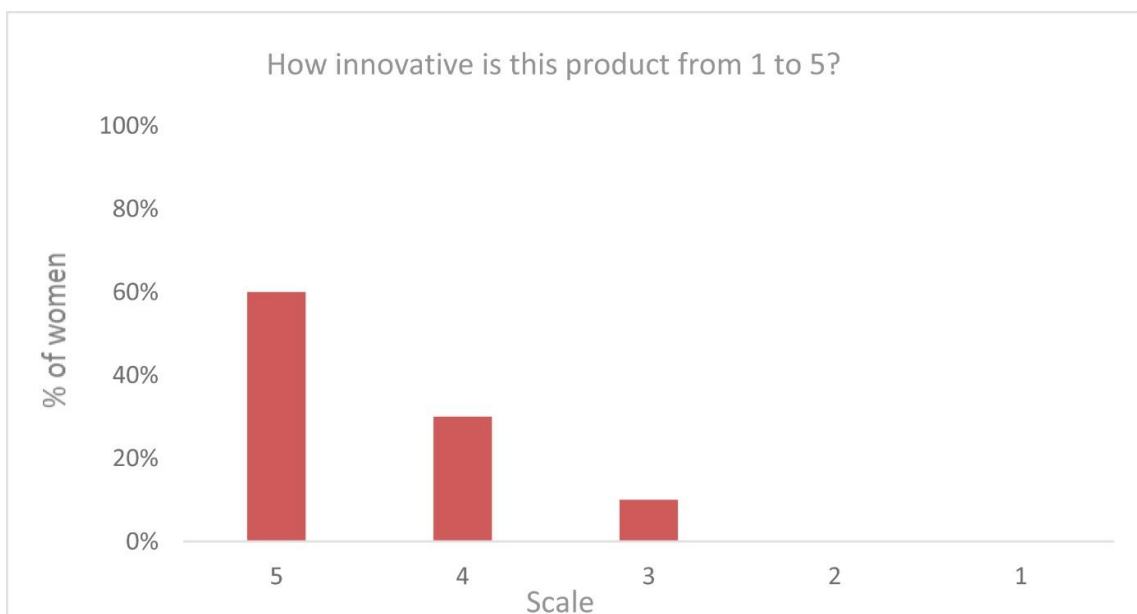


Figure 15: Graphic Presentation of the answer about Innovation.

The figure below shows a graphical representation of how many respondents prefer a wooden or cardboard box for the product. As many as 70% of them answered wooden.

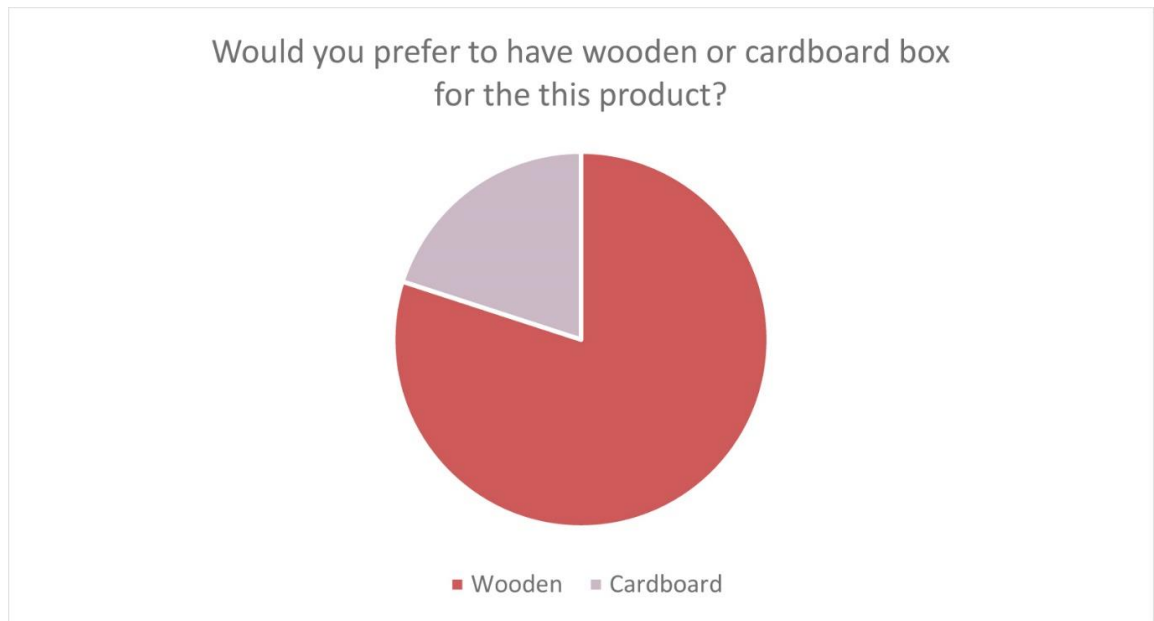


Figure 16: Graphic Presentation of the answer about material.

Almost all respondents (98%) like the idea about rechargeable packaging (Figure 13). It is an indicator that people pay more attention to product sustainability than before.

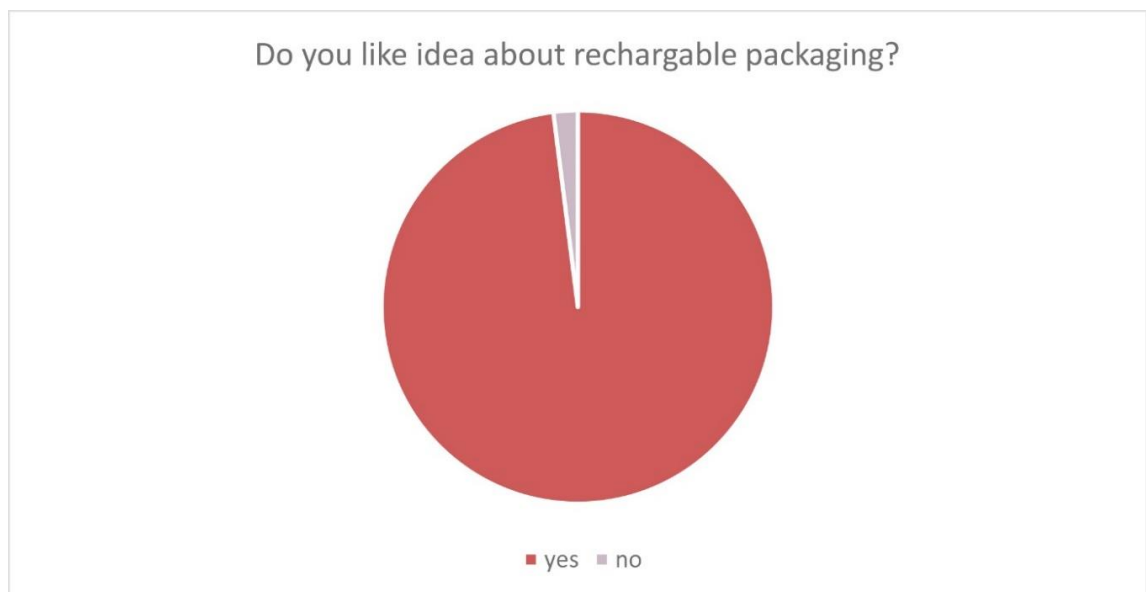


Figure 17: Graphic Presentation of the answer about rechargeable packaging.

The figure below shows a graphical representation about satisfaction with the chosen materials. Majority of the respondents (65%) like the materials of the product, other 35% would like to cosmetic jar be made from the wood instead from the glass.

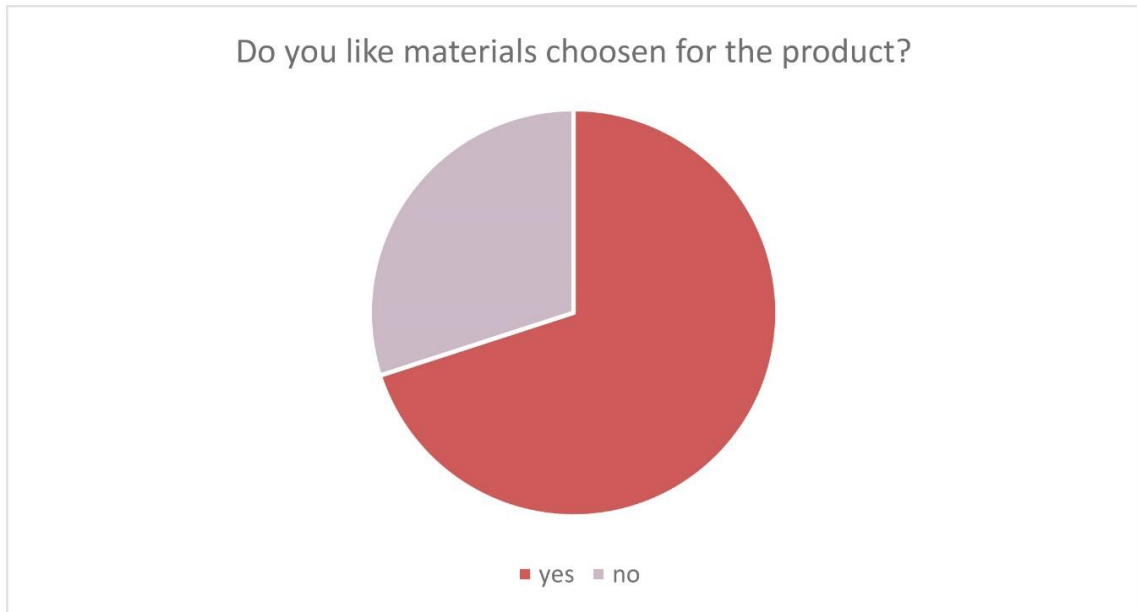


Figure 18: Graphic Presentation of the answer about materials of the product.

The majority of the respondents (88%) like the logo, the rest of them (12%) think that the font should be more bold and more strong than the chosen one.

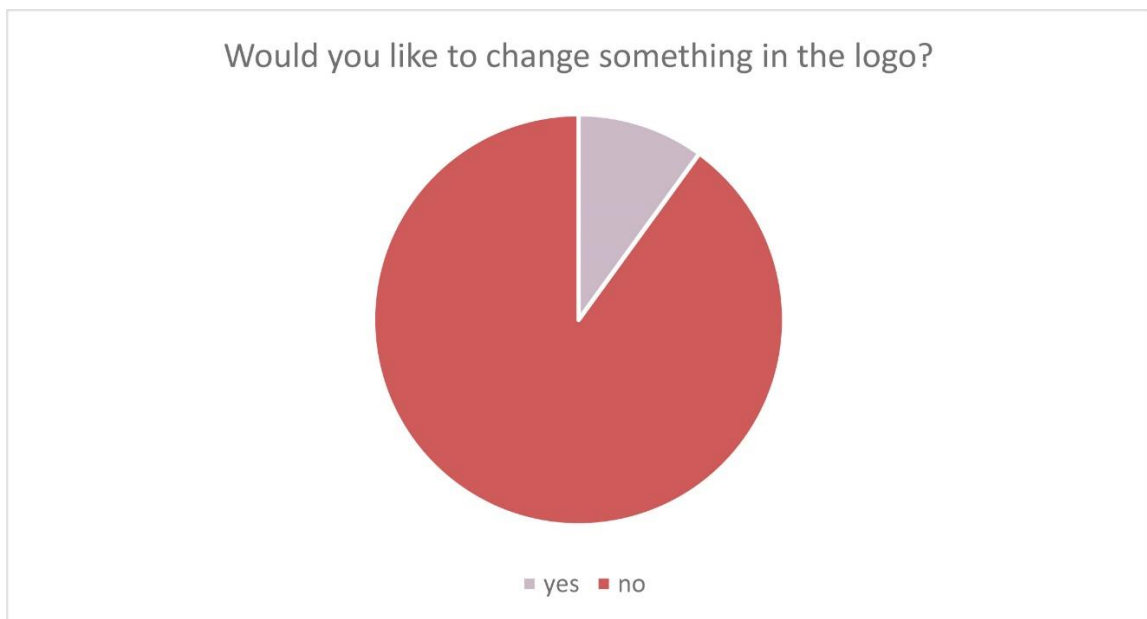


Figure 19: Graphic Presentation of the answer about logo.

Based on the answers, applicator is seems to be very important for this product. Majority of the respondents (75 %) answered with 'yes' and the rest of them (15%) with 'no' (figure 16).

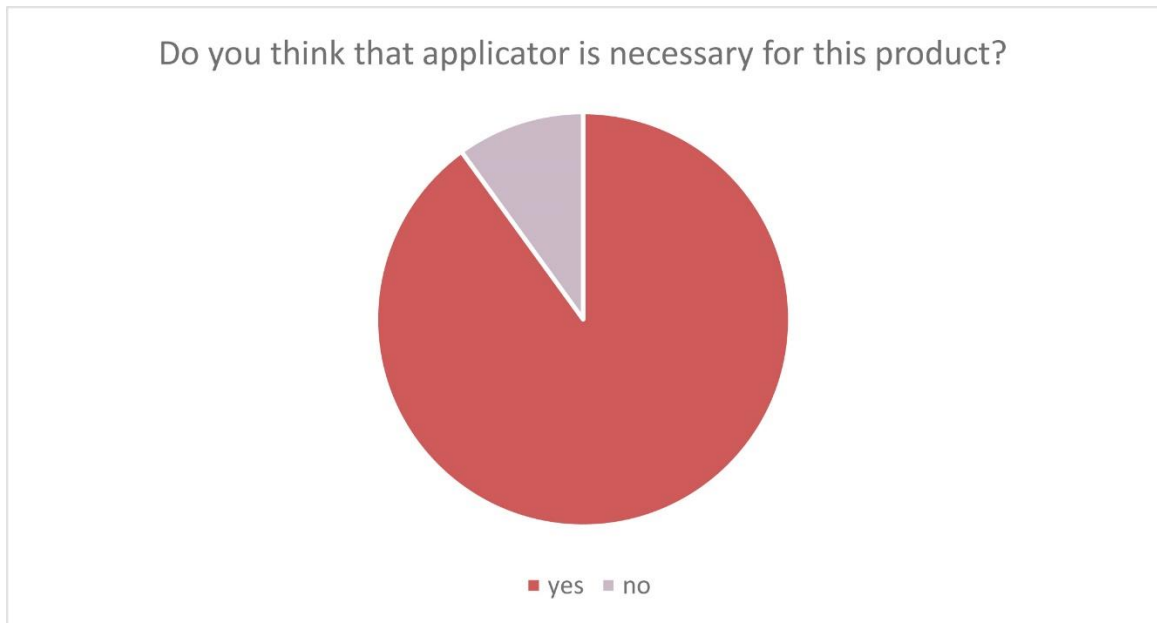


Figure 20: Graphic Presentation of the answer about applicator.

The figure below shows a graphical representation how respondents rated the product. Half of them (50%) rated it with 5, 40% with 4, 5% with 3 and 5% with 2. To sum up 90% of respondents like the product, other 10% is not very satisfied.

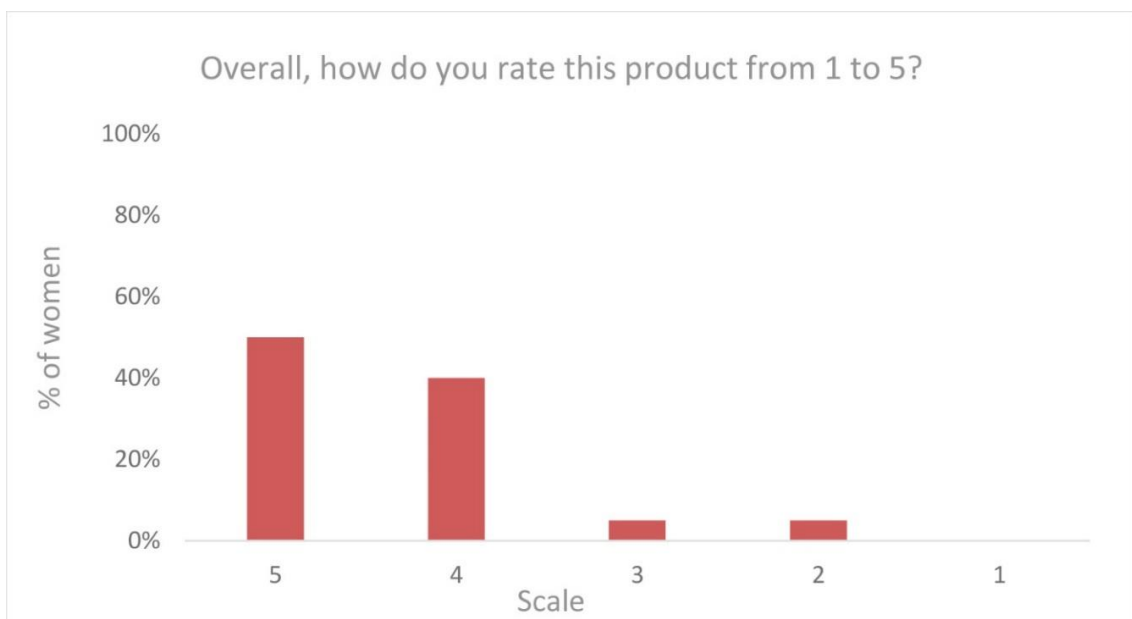


Figure 21: Graphic Presentation of the answer about product

The last question was how much they spend on such products monthly. They had to chose one of two option: less than 50 € or more than 50 €. Half of them answered 'less than 50 €' and other half 'more than 50 €'.

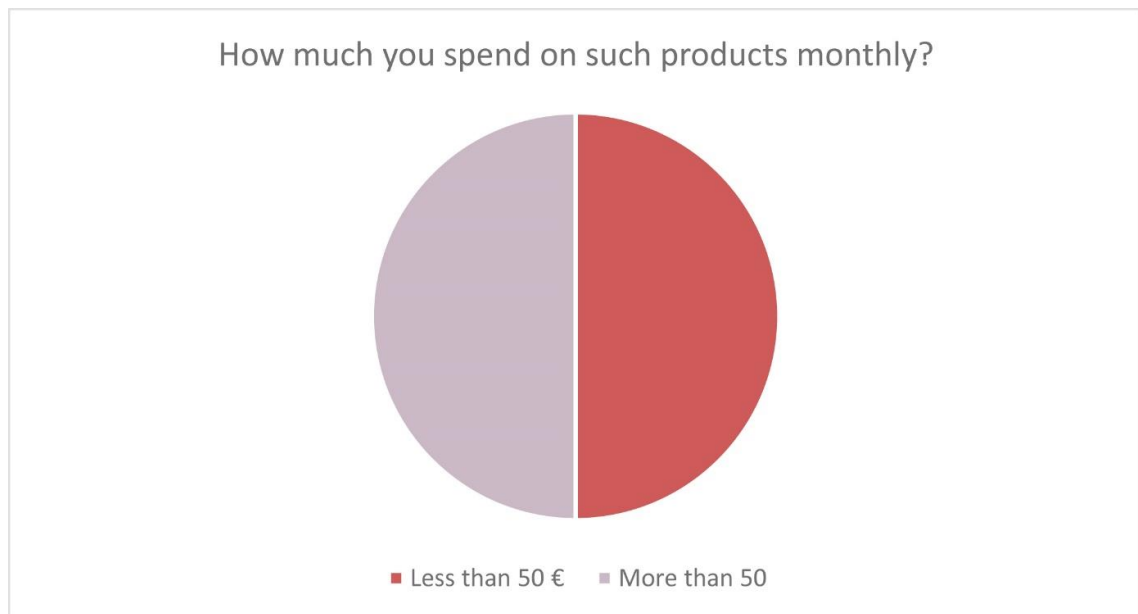


Figure 22: Graphic Presentation of the answer about product

4.9 Wooden Box

Base on the survey, 70% woman prefer wooden box instead of cardboard packaging. Since this is a limited edition, we decided to complete the packaging with a wooden box. We used the Adobe Illustrator software to design the box and then laser cutter to cut the wood. The logo is engraved on front. Also, a 'chain' of small polygons wraps around the box and then close on top with two big polygons. Below is presented wooden box.

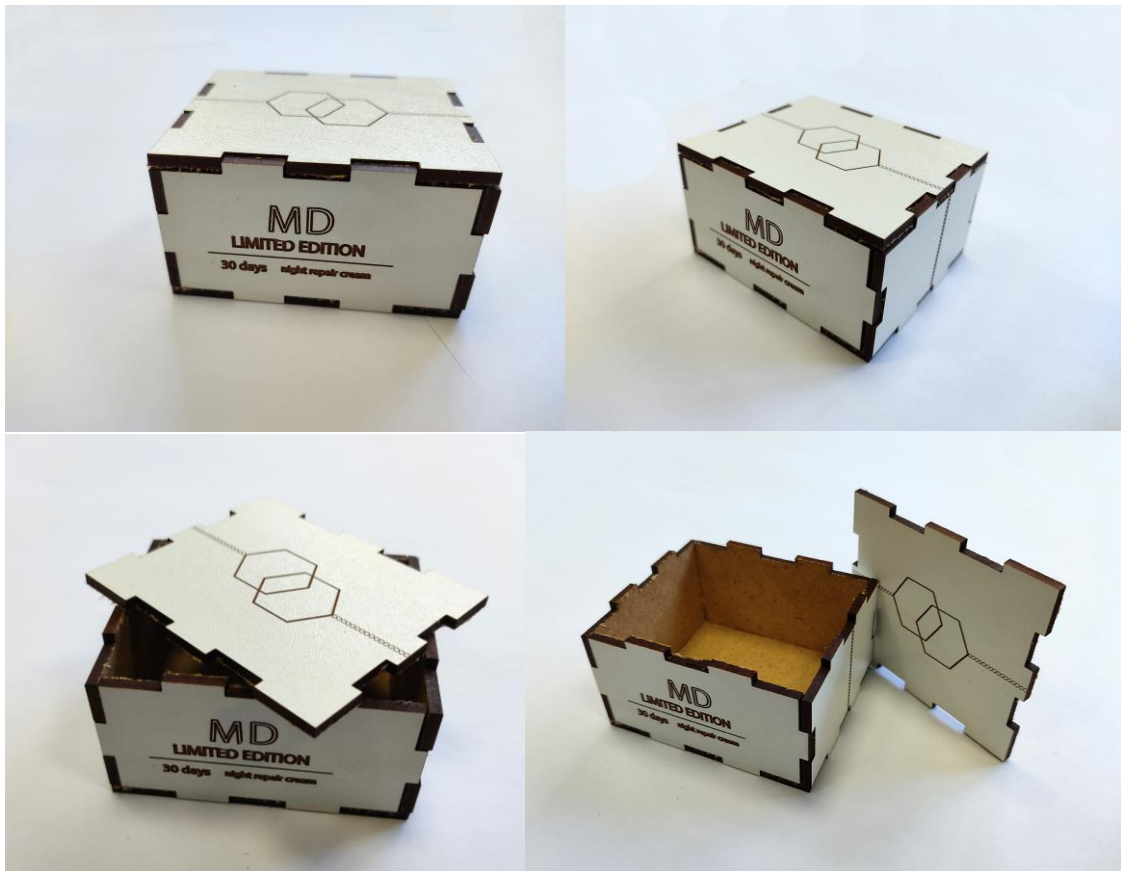


Figure 23: Wooden box



Figure 24: Rendered Image of Cosmetic jar and Packaging.

Conclusions

In the beginning of this dissertation we set some questions that we were going to investigate. First of all, we explored and analysed the problems the consumers meet during their use of the current packages of cosmetics. We also searched deeper to these reasons in order to frame the factors that affect a good packaging design for cosmetics and extract from them the key elements that we should integrate to our design.

Later on, these needs were translated into product specifications in order to start the concept generation phase. This phase begun with the clarification of the design problem and continued with the concept generation through the help of mind map, empathy map, persona, mood board and sketches. Finally, present study concluded with the generation of the brand, the relevant logo and the final CAD model of packaging.

The conclusions of this research is that the packaging of cosmetics that is offered at present in most cases are not sustainable. Our suggestion here is the reuse and refill of the package. Also, there are not big differences in shapes of packaging for skin care products.

At the end we did the survey in which participated 80 woman. Based on the results we make decision to include in our packaging a wooden box for the cosmetic jar. The use of wooden box as packaging for our product is a good choice, as it can be recycled and highly sustainable.

In designing a product, packaging became as important as the product itself. There are several factors that must be considered in designing a product package, such as consumers increasingly aware of the environment, and consumers are also getting smarter to choose environmentally friendly packaging.

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Figures

Figure 1: Clinique Jar (Source: www.amazon.com), p. 9

Figure 2: Clinique Tube (Source: ae.goldenscent.com), p. 10

Figure 3: Vichy Airless Pump Bottle (Source: www.lookfantastic.gr), p.10

Figure 4: Korres Dropper Elixir (Source: www.hersonissospharmacy.com), p.11

Figure 5: Packaging for the soy milk “Soy mamelle” (Source: www.pinterest.com), p. 20

Figure 6: Brainstorming - Mind Map, p. 32

Figure 7: Empathy map, p. 34

Figure 8: Persona, p. 35

Figure 9: Mood board, p. 36

Figure 10: Face Cream Packaging Concept, p. 37

Figure 11: Prototype and Concept Testing, p. 39

Figure 12: Rendered Image of Product, p. 40

Figure 13: Rendered Image of Rechargeable part and Applicator, p.40

Figure 14: Logo, p. 42

Figure 15: Graphic Presentation of the answer about Innovation, p. 4

Figure 16: Graphic Presentation of the answer about material, p. 44

Figure 17: Graphic Presentation of the answer about rechargeable packaging, p. 45

Figure 18: Graphic Presentation of the answer about materials of the product, p. 45

Figure 19: Graphic Presentation of the answer about logo, p. 46

Figure 20: Graphic Presentation of the answer about applicator, p. 46

Figure 21: Graphic Presentation of the answer about product, p. 47

Figure 22: Graphic Presentation of the answer about product, p. 47

Figure 23: Wooden box, p. 48

Figure 24: Rendered Image of Cosmetic jar and Packaging, p. 49

*Figures that do not include a source, are product of my own unaided work.

